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Beaver Seasons: A Whatcom Phenology

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Beaver Seasons: A Whatcom Phenology

By

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Accepted in Partial Completion
Of the Requirements for the Degree
Master of Fine Arts

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Master's Thesis

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Rob Rich
May 12, 2016

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A Thesis
Presented to
The Faculty of
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Abstract

Beaver Seasons: A Whatcom Phenology is a journal exploring seasonal changes across several beaver-shaped habitats in Whatcom County, Washington. Drawn especially from the author's work co-stewarding one hundred acres of conserved land, the journal's entries reflect on phenology in the lives of beavers and other species who benefit from the ecosystems they create. Inspired by the Japanese form of *haibun*, the author shapes these events in verse and compressed prose meditations to reckon with nature's cycles, changes, and interconnections in his travel through the year. Through curious and compassionate pursuit, the author seeks new ways to be grateful for the places of which he is a part.

Acknowledgments

I am grateful –

for my friend Rebecca, who introduced me to Whatcom County on a wintry weekend of 2008, wet and full of eagles;

for the vision of the North Cascades Institute, and for Saul, whose affirmations of natural history nudged me back to this far corner;

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and for the beavers, with all they connect and create. Let's keep working together.

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Coming to Light: A Prelude

I hunt far in, as deep as
light moves; where light steeps
in the long momentum.

Not that it holds, it
changes. The changes
balance. Before they tip through
to regroup I let
my eye open, fill
for a fraction of
truth, and shut:
I keep for life
how light
shapes how
lives deepen.

- Philip Booth, from "Photographer"

The old calendar
fills me with gratitude,
like a sutra.

-Yosa Buson

Whatcom ('wɑt kəm): *n.* **1.** a creek in NW Washington with a former Nooksack camp at its mouth, named for the "sound of water splashing or dripping fast and hard." **2.** the first of four colonial settlements that became the city of Bellingham, WA **3.** a lake in NW Washington **4.** a county in NW Washington [c. 12,000 B.C.; < Nooksack. *Xwo̲tqwem* ~ Lummi. *X̲wót'qwem*, bubbling, sizzling, fizzing]

In my freezer – among blueberries and blackberries, beans and peas, tomatoes and broccoli – I've preserved a varied thrush. The shrill whistle-songs of these birds had charmed my first summer forays to the North Cascades, and they marked a hunger to know the land of my new home in Whatcom County. But without a glimpse to connect the piercing cries, the varied thrush remained a grail bird, seen only on the cover of *Sibley's Field Guide to Birds of Western North America*. But months later, my wish was granted. Painfully. There he was, upturned in his tigerish motley, half-blurred on sidewalk bricks. And as his still soft breast incubated my cold palm, he became something more than my new region's symbol, something more than a tally in the millions of window-struck birds. Here, I thought, was a seasoned inhabitant. Wintering in the lowlands among us, he had come to probe the day's edges, gleaning the last wizened fruits in thickets without snow.

Though baffled and beaten by the window's glare, he knew far more than me about the changes within our typecast green, misty winters and dry, mild summers. To hold that thrush was to hold a season itself, a life adapted to survive in time with place. He became a palpable moment, heavy with questions: How does such an animal know that it's time to be here? Or that it's time for migration, or mating? Without walls or glowing screens adorned by the Gregorian calendar, how could his almanac be so adapted, so learned and practiced in synchrony with other forms of life? That dance was the one I sought to enter. I didn't know how, but knowing that thrush could not be swept aside, landfilled, or ignored, I cradled him home like a child with a snowball. With more than a year in the freeze he planned to escape, he hardened. Though his dark neck band remained, his orange breast and wingstreaks grew rusted. Still, each time I rustled through my own cache of other harvests, he clung to his Ziploc like the turning year's

keepsake. He became sustenance and a sacrament for this project, and he beckoned day by day: *'tis the season.*

And yet the thrush was no more a totem than the seasons are tamed. Grade school teaches the seasonal quartet with embarrassing simplicity: snowmen, flowers, suns, leaves. But perhaps as we age (or return to our unschooled childhood perception) we realize the infinite variety and complexity in the year. In the most objective sense, we have seasons because earth circles the sun every 365 days and because it spins round itself akilter, knocked 23.5 degrees off axis through the poles. Together, these cyclical feats ensure the sun's light will strike no day's latitude the same. And for any given latitude, light's intensity will meet earth's diversity – its textures, creatures, and weathers – in myriad ways. And the way our seasons result from these mashups of weather, ecology and light is not random. Earth's roundness grants that a day's sunstrike will return again next year, an echo of time re-placed.

In other words, the way earth's geometry has fallen in sync with eons of astronomical calibration is only part of the season's equation. In order to be understood, seasons must literally take place. And to be known so, seasons must be lived in and through, even loved. The work of David Abram stirred me to see that time has topography, in the way that any "present" moment includes a spatial "presence." In his landmark book *The Spell of the Sensuous*, Abram speaks of the "more-than-human" way in which

> our bodies have formed themselves in delicate reciprocity with the manifold textures, sounds, and shapes of an animate earth – our eyes have evolved in a subtle interaction with other eyes, as our ears are attuned by their very structure to the howling of wolves and the honking of geese.

With his help, I began to appreciate the ways many oral, indigenous cultures, thus knew – and still know – their places through a storied, sensuous symphony.

To fully explore the seasons, I decided that my role as a naturalist restoring seasonal awareness had to incorporate this re-storying tradition. I could not merely “speak a word for Nature" as a solo, but I would have to appreciate the subtle ways that supposed binaries – self and other, culture and nature, language and land – entwine in utter polyphony. I began to envision the ways my work might harmonize where "space and time are reconciled into a single, unified field of phenomena…[where]…the encompassing earth…become[s] evident, once again, in all its power and depth, as the very ground and horizon of our knowing." Edged against the 49th latitude with weather so powerfully swayed by mountains and sea, I found the earthspace we call Whatcom County to be a good starting point. But while we have seasons like no other, our blessed variety – from shorelines to snowpeaks – overwhelmed me. While its borders became valuable as limits, the county's lines were political, largely blind to the contracts nature keeps in watersheds, migration corridors, and refuges to feed and breed. In order to true my study of seasons, I needed to look closer, to find habitats where people and creatures took a more organic form in time.

The Nooksack and Lummi people have thrived for millennia on "seasonal rounds" through such habitats in our county, following the events that sustained them: the time when coho salmon return to earth, the time to harvest camas, the time to journey to mountains for berries. These were – and still are – paths of survival, attuned to cues of the seasons' reoffered foods, fibers, and medicines. Many of us carry related patterns today, and naturalists have a word for it: phenology (from the Greek *phaino*, which means "to show, appear, or come to light", and *logos*, which in this sense means "to study"). This word now evokes the study of the seasonally recurring events, activities, and signs in the lives of plants and animals. Though unnamed in their time, phenology was alive in Gilbert White's *The Natural History of Selborne* (1789) and in

Henry David Thoreau's post-*Walden* work towards a "Kalendar" of flowering and fruiting. "No one, to my knowledge, has observed the minute differences in the seasons," wrote Thoreau in 1851. He spent the last decade of his life pursuing "a book of the seasons, each page of which should be written in its own season and out-of-doors, or in its own locality wherever it may be." And from 1935 until his death in 1948, Aldo Leopold's phenological observations inspired *A Sand County Almanac*, the book that helped so many to see that seasonal changes are in fact "the arteries of the land."

As I thought how to honorably echo the ancient calendrical patterns of the Nooksack and Lummi, I came to see how my intimacy with wetland and riparian habitats could focus my work. These were not only the places that I'd most observed, but they were places where I'd served as a volunteer with Whatcom Land Trust and the Nooksack Salmon Enhancement Association (NSEA). Through weekly "work parties" along the fecund banks of water and land – planting trees, weeding invasives, and cherishing changes – my sense of investment took hold.

But the further grace of that work was the friendship I found with Tricia Otto. A retired doctor and fellow supporter of the Whatcom Land Trust and NSEA, Tricia has devoted her life to the restoration and conservation of 100 acres at foot of Squalicum Mountain. It did not take long for me to esteem her as a companion and mentor, but also as a phenologist to the core. Over the last twenty-six years, she has welcomed many to visit (and partake) in her stewardship work – friends, professional ecologists, and field tripping schoolkids among them. And though I never guessed I'd be welcomed to join her crew of weekly co-stewards, I proudly accepted. As a landless newcomer in Whatcom County, I was thrilled to help in her woods, not least for the chance to work alongside her most intrepid of conservation allies: the beavers.

On the one hand, it is not surprising that beavers like Whatcom County. Though we lack the rich aspen, willow, and cottonwood groves they favor east of the Cascades, we have plenty of flowing water in low-gradient creeks to catalyze their damming instincts. But on the other hand, the mere existence of a beaver should not be taken for granted. In less than three centuries of European colonization, beaver populations in North America plummeted from an estimated 40-80 *million* animals to a mere 100,000. Before corn or cotton or sugar or trees, beaver fur was the commodity of conquest. The European craze for beaver hats and blankets not only fueled the "Beaver Wars" between the French and British, but also the fear-driven feuds between Britain and the fledgling United States. Spurred in the wake of Lewis and Clark, these nationalist crusades collided in the north and west. In our final corner of the country, Hudson's Bay Company governor Sir George Simpson went down fighting with a "fur desert" policy, believing that if they Americans "become exhausted in Fur bearing animals they can have no inducement to proceed hither."

Americans won over the land we now call Whatcom County, but in our collective failure to see the beaver's keystone role in the creation of biodiverse ecosystems, the near-extinction was truly ecocide. While few among us want beaver wares today, the beaver fur trade was a continental loss, and one not less than slavery or the suppression of native peoples. While I do not wish to aggravate this wound, I speak from a gratitude for and commitment to those that survived. As beavers are returning to places once without them, their populations now face the growth and still faster pace of our own. Beavers are still at risk perhaps because they are so like us – except for the way we think we are wiser. While the change beavers bring are impossible to generalize, we have much to relearn from them, and we need more examples on private land of how to be good neighbors – even partners – in the restoration of biodiversity.

Restoring native biodiversity is not just about claiming the greatest number of species, but also the genetic variations within species and their array of functional relationships throughout ecological community. Biodiversity is a means toward what Aldo Leopold called "land health," which he described in 1944 as "the capacity for self-renewal in the soils, waters, plants, and animals that collectively comprise the land." On Tricia's property, the beavers centered phenology in an experiment re-member and vitalize the days that give health to a wetland year. Though I journeyed throughout the Whatcom County for comparative insights into these habitats, I always returned to Tricia's place to work, to watch, and to wonder. Ultimately, my work has been to chart a calendar of these places, not only exploring the times of beavers, but also the lives of cohabitants including western toads, salmonberries, wood ducks, dragonflies, and coho salmon. Because each species' seasonal responses are both interconnected and individual, they deepen what it means to live by light's rhythms.

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Beaver Seasons has become my way to record and to reckon with these lives in time. In this journal of a single year, I distill the gleanings of my first two years in Whatcom County. While I aim at all times for wholeness and accuracy, I do not claim expertise in my subject. I am a beginner faithful to experience, and an amateur in the literal sense of "one who loves." Nature's connections are to me an experience of religion, which itself derives from the Latin *re-*, for "again," and *-ligare,* for "to connect." There are religions that keep hours in circadian cycles, weekly times of rest and praise, and holy days throughout the year. But from its earliest stages, *Beaver Seasons* has grown from a desire to affirm and ground these qualities – not with an institution, but through phenological attention to the local, animate earth. In Wendell Berry's tradition of Sabbath poems, I felt an initial pattern for such observation and observance,

following and hallowing the promise of nature's unfolding days. His poems were paths in devotion, ways to partake in times that echoed the earth's own poetry.

Philip Booth, Thorpe Moeckel, Gary Snyder, and Mary Oliver further deepened my desire for writing that rooted in the process of attunement to the more-than-human world. These poets often work in the exploratory, "organic form" that Denise Levertov saw emerging in the tension of experiences that are both fluid and inherently shaped. Their poems not only invite a way of compassionate looking to and through the surface of reality, but they also exalt the sensory encounters that demand remembrance in speech.

The inherent form of my own project owes a great deal to the seasonal aesthetic of traditional Japanese poetry. Ever since a formative and fortunate visit to Japan with my father nine years ago, I've been intrigued by the particular Japanese fusion of their indigenous Shinto rituals with the direct attention of Zen Buddhism. At the time of our visit, we saw the preparations for *Shogatsu* (the New Year's festival), but in the course of our travels we learned of festivals for *Hanami* (flower viewing), *Sakura* (cherry blossoms) and *Momijigari* (fall leaf color change). And since returning to the United States, I've only further come to appreciate how richly seasonality is woven within the haiku tradition of poetry.

When Matsuo Basho distilled and democratized Japanese poetry around the simplicity and seasonality of the haiku, he demonstrated how the heart (*kokoro*) of his work lies within direct perceptions of everyday life. "Learn about pines from the pine," he wrote, "and about bamboo from the bamboo." Honed around locally derived season words (*kigo*), Basho's haiku suggested how seasons can be at once a structure and a subject for poetry. I borrowed *kigo* as a hinge to focus my craft, but it was Basho's masterpiece *Narrow Road to the Interior* that truly

catalyzed my own form. In this journal of travels among Japan's most simple and sacred places, Basho alternated descriptive prose with haiku so that each concentrates or reflects the other.

In doing so, Basho was himself drawing on the tradition of Japanese diaries (*nikki*) that began in 935 with Ki no Tsurayuki's *Tosa Diary*. While many tenth century Japanese scholars used journals for government documents written in the Chinese language, the *Tosa Diary* pioneered a path for others (including women) to transform the genre into a vernacular work of art. Basho's form is now called *haibun*, and perhaps for the way it mimics breathing, heartbeats, or footsteps, it can effectively harmonize the journal with journey. Filled with observances that were transient yet timeless, Basho allied verse and prose in poetry that was filled with spiritual energy and trued with earthy experience.

While I do not follow the syllabic rigor of traditional haiku, *Beaver Seasons* weaves my paired urges as naturalist and poet in the spirit of Basho's journal. Echoing the very patterns of my seasonal vigilance, the journal's etymology can be traced through the Old French to the Latin *diurnal*, suggesting "a day's work." In this way, I see the journal as rooted in the preliterate, primal possibilities, like a hunter's grateful story or a gardener's harvest prayer. And while it is unnecessary to recount a modern journal's manifold purposes, I believe it remains one of the most practical, versatile, and participatory forms of writing we know. I've been influenced by the ways Gerard Manley Hopkins and John Clare used the journal as a crucible for poetry, but I've also valued the way thinkers like Henry David Thoreau and Charles Darwin saw the validity of the journal as its own poetic document. They did not see the journal as a product, but rather as an ongoing, integral record of being; it was a place to release the wholehearted presence that the form demanded of them, provisional as it is.

I have aspired to uphold the intimacy and dailiness of their work, but I've also been shaped by writers such as David M. Carroll, Peter Matthiessen, Paul Gruchow, and J.A. Baker who rework, craft, and hone the journal for a wider reading community. In their practices, each journal "entry" is not unlike a poem; it is an opening, made with the focused description that Mark Doty once described as "an inexact, loving art, and a reflexive one; [revealing that] when we describe the world we come closer to saying what we are" (6). This is my path – circling, centering, and ultimately pointing to ways our greatest truths live in our lives.

A Seasonal Round

June 30

"Come on by sometime." Tricia's invitation came just like that. We had barely met each other, but surely she had seen my eyes flare when she spoke of beavers. *Beavers!* I swelled with curiosity just saying their name. I heard a tail slap once, deep in the cove of an Adirondack lake, and I saw one skimming along a Vermont alder carr, but that was as close as I got to a live *Castor canadensis.* I knew nothing about what it required to neighbor with these creatures.

Nothing about sharing the dregs of a summer creek, nothing about adapting when the winter rains rise.

The beavers showed up at Tricia's – without invitation – some fifteen years ago, perhaps tasting trees and gauging flow, just as homesteaders ask about woodlots and wells. Beavers had been known across Lake Whatcom at the Stimpson Family Nature Reserve, and down at the Lake's outlet to Whatcom Creek, but their origins along Tricia's north shore tributary have remained a mystery. The maps' dotted line draining to Agate Bay said this creek was intermittent, and so too were the beavers' first seasons. But Tricia knew the beavers had come to stay – and were making the creek a constant presence – when they plugged an old culvert. That's when the driveway started getting deep. Most people in that situation would have looked up the nearest "Wildlife Control Operator" for a hasty dispatch. But not Tricia. She called the Nooksack Salmon Enhancement Association (NSEA), because the beavers affirmed what she knew all along: that dysfunctional concrete tube was a barrier for fish and a bruise on the land. Instead of banishing the beavers, she hired a restoration team to batter the culvert and construct a good bridge.

While this ranks among the most dramatic of examples, Tricia's hundred acre homestead is filled with restorations of this kind. Her house itself was literally a barrack, towed from a military auction at the end of World War II and notched against the southeast slope of Squalicum Mountain. But soon after proving up his claim in 1946, that first owner left the land – and his Pontiac Torpedo – behind. Today the old car rusts under raggedy second and third growth trees that must have been saplings for the property's second owner. We might say he tried to "improve" the old lot, first with cows, then a barn for the cows. Then two farm ponds and an orchard of cherries, grapes, a quince and some Gravenstein, Melrose, and Tompkins King apples.

Later, azaleas and rhododendrons to sell in town. But at last, after thirty years, when the work became too much, he moved farther into the country, wanting his own fresh start.

Tricia was just fine to hear that this land grew trees better than tomatoes. She didn't want pastures or produce to sell. She wanted the plants and the creatures that adapted to this place in the wake of glaciers: the community of life that emerged in that barrenness, the community that thrived from enduring with those bonds. Since arriving in 1989, Tricia has been driven to restore that ecology. It became clear that she did not invited me for a mere house tour, but rather to see the neighborhood of homes in a rewilding woods, each in their own way inhabited by what was made or unmade, loved or let go.

Here, ponds shallowed with widened lush edges,
making pools where the toads and frogs can breed
in the shadows of sedges and rushes,
dock and camas, buckbean and wapato;
here, oaks planted so the wood ducks come,
and large boxes built for their families to fill;
other homes too – hundreds – for swallows and martins,
owls and wrens, even the brush heaps built crannied
and the skinny bat roosts and the trap-homes
used to keep nest-stealing starlings away;
and under here, the rocks with the rooftile laid for the snakes' hibernaculum;
and up there, through barn attic cracks is a nursery for bats;
look! they are birthing today, the amnion splotched
to the board laid for counting the young every year;
and with the infinite berries: salmons, blackcaps, and the thimbles
my favorite till finding the service and straw all sweet, all now
then here at last, where the darners stitch with damsels
and where admirals flit over gravel, mud
the creek-cum-swamp, the beaverworks, the abundance.
The more we see, the more we see.

July 5

Eleven miles from Tricia's place, I live in apartment that I chose for its east windows. Perhaps I still orient in the direction I came from, or perhaps I join the generations who cling to elevation for definition. Many a visitor has named a peak for a man, but natives know mountains

as part of a home, each with a role for survival. I look for that second way. Daily I watch for our morning light, waiting to see how it fingers beyond the parking lot and the overrun blackberries, the houses and the new houses, the interstate and Samish Hill, and beyond the sometime sight Mount Baker, the subalpine hunting ground the Nooksack call *Kwelshán*. Their ancestors came from the west some 12,000 years before Tricia and me, fringing the ice-free shores and kayaking down the "kelp highway." I yearned to read of these Pleistocene journeys, though no book tells how they made tools make tools or learned to call seasons by name. That is living lore, caught in the bloom or the song.

Nooksack is among more than fifty distinct oral languages indigenous to the Pacific Northwest, each in a vibrant exchange with this land. While I cannot complete the conversation, I can see the snowcapped nub of *Kwelshán* called *Kweq' Smánit*, for "white mountain." Their Nooksacks' ancestors saw the peak as young and sharp, but now I see it blunted and blown. Though I love its apricot alpenglow on early winter nights, I also love its slow, shadowy emergence in a summer's dawn. It always comes, but never the same. Today, just after five a.m. at fifty-three degrees due north of east, the arc remade its round.

This should be the time when the rays kindle green from the serrated hills. But today the mist threads thickened, and the sun did not break them. A blind man could have told me it was smoke, but the strain of my sight hid all of my smell. The earth appeared unearthly, hazed by a fire nearby, and another, hung 93 million miles away.

The fire was up on the north side of Stewart Mountain, less than five crow-miles east of Tricia's place. I can see Stewart from my window, but for Tricia the mountain is kin. It stands broad and dominates her view, like a resolute brother to Squalicum. And though Stewart is half-scalped with a straight edged clear cut, much of the south side remains a well-trod corridor for

wild roamers. But wherever they were today, I'm sure every bear, bobcat, coyote, and cougar heard the choppers' drag-and-drop brigade whirrin buckets from the lake. No people live on Stewart's slopes, and it's managed by the Washington Department of Natural Resources (DNR), but it's the land of every statesman, it's next door, and it's on fire. Whatever happens there, happens here. And while fire itself is not a bad thing, this is one of the first times, and the earliest times, that a burn has crested the Cascades into our Lake Whatcom foothills. Reports say that it's at five acres and holding, but it remains dry with a light breeze.

I came over to see if everything was alright and to learn my new chores, but the daily doings take on new weight. "If you forget things, they die," Tricia warned as I learned where to water the spring's new-planted goatsbeard. I staggered up from the swamp and dowsed each one with five gallon buckets. The water swole the surface, then the land swallowed it in a bowl of dark dust. The plants were already parched, and other days I might have balked and called the gesture fruitless. But today the mere fact we had water was a usufruct gift, something I could bear for what the beavers gave. Their works have recharged the groundwater table, and while beaverless creeks have already started to gasp, we're a few drops ahead. The beavers didn't have to be here, but here they are. They have gathered water, spread it wide, and sunk it down to thirsty roots and soils. They have created a wetland where none was before. It's not much over an acre, but it's something. A margin, a blessing, a moat.

July 13

They say the fire is under control. The DNR crew has the thirtysome scorched acres in mop-up status now: extinguishing edge smolders, clearing singed brush and snags, feeling for heat in underground roots, ensuring debris won't roll to new fuel. Even so, Stewart's sandstone slope smokes more than igneous Baker's icy sleep.

Meanwhile, I've begun to work in earnest with Tricia's crew. Most weeks, there are six of us. Noah is a rookie like me, a sixteen year-old ornithologist prodigy from Acme. I still think his first words to me were a deadpanned "orange-crowned warbler" when he saw me straining into the understory for the source of a shivering trill. We are led by a trio of veterans who have worked here since Tricia's earliest days: Erik, our sagacious arborist who hails from Lummi Island each fortnight with chainsaw, woodchips, tools, and tree-savvy; Carol, our planting advisor and focused weed sleuth who is friend to all but the creepy grass and geraniums; and Beto, our tender strongman who is equally able to Pulaski-out a stubborn patch of reed-canary grass, deadlift a tree over his back, and cradle Carol's feeble dog.

Together, we are learning what it means to be owned by land. Tricia holds the title to these hundred acres, but she has voluntarily renounced her development rights in a conservation easement. While her land can never be subdivided or cashed out for condos, the terms of this agreement empower her to support the native flora and fauna that sustain us all. Treeplanting comes to mind as a relevant task, but we are no less engaged in weeding, transplanting, pruning, burning, brushpiling, and even harvesting. Tricia's family legacy of Wisconsin native plant conservation has taken firm root in Washington, and her place has one of the clearest expressions of Aldo Leopold's land ethic I know, which says that "a thing is right when it tends to preserve the integrity, stability and diversity of the biotic community. It is wrong when it tends otherwise." This dictum challenges us – daily – in the decisions that will help this place have a durable future.

We do not pretend this place is wilderness. Management practices abound, and some of our work involves the slaying of invasive species that monopolize habitat, spread diseases, or massacre their neighbors. Earlier campaigns against the Himalayan blackberry have mostly

ended, but we still must strangle the creepy grass and the ever-reaching pink roots of reed-canary. And as if in disgrace of my name, the "herb-robert" geraniums may be our most tenacious self-seeders, delicate as are. "*Las gañas*," Beto calls them, for the crusty eye mucus that is so irksome and foul from the start of one's waking. Beto is a little more eager for his special role in bullfrog dispatch, for they are one invasive species that offers him a tasty reward. Though dinging them with a BB in their basking feels a little unfair – even for a mess of fried frog legs – I know it will be pathetically necessary for native amphibians like western toads to return. But most times our human interventions are more preventative, or hidden: caging tender trees from ravenous deer, hauling windfallen firewood with the gas-guzzling Amigo, or spreading heaps of monocultured corn for the wood ducks and band-tailed pigeons. We live in contradictions.

While some of this makes me cringe, I am coming to respect our work as part of the wild process to help the land heal itself. Tricia spent her career as an OB/GYN, and I think that informs my trust of her years of attention to this land. She still upholds the oath of her profession with her ongoing practice of care, affirming that "whatsoever houses I enter, I will enter to help the sick, and I will abstain from all intentional wrong-doing and harm." Given that ecology, from the Greek *oikos*, means a "study of the house," old Hippocrates would be most proud to see his promises grounded here. Indeed, Tricia is what I call a grass-roots naturalist: not only for her local fidelities to the beauty of birds, trees, and flowers, but also for knowing the grasses by name: the onion and quack, the manna and brome. She works to conserve each-in-community, for the restoration that ecological thinker Peter Berg once described "is like adding a birthing room to a hospital that only had a trauma center." Not so long ago, this was just another cutover, weedsprung wasteland that only the most deranged or desperate among wood ducks would have

found appealing. We're not saviors here, but abetted with beavers, this place is becoming wild – not through being *not* tame, *not* cultivated or *not* loved – but through being willed to diversity and continued self-renewal; through being alive.

July 20 - To FS-3071, above Anderson Creek

In birthing ecosystems, the beaver has no rival. Though we *Homo sapiens* have far surpassed the beaver with magnitude and might, we're seldom wise enough for works of interdependence, change, and flow. In this regard the beaver is a true "ecosystem engineer," one able to boost the diversity of botanical species by as much as twenty-five percent in the habitat it modifies. This is not just because a pond community is more ecologically productive than the forest it replaces, but because its edges are so fertile and dynamic. The western toad should be a chief inheritor of the sun-warmed, sinuous riparian ecotones born from shady woods. But their absence throughout many Whatcom County lowlands is a sign of wetlands lost to edges that do not flow. To celebrate the rites of western toads, I need to seek ponds not mazed in pavement or bossed with bullfrogs, ponds further up the main aquatic artery of our county: the North Fork of the Nooksack River.

From the North Fork's headwaters, after trundling a frantic j-curve out of Shuksan's cirque, fresh-charged creeks pummel and rage: White Salmon, Ruth, Bagley, Razor Hone, Galena, and lots of no-names too. Once Swamp Creek comes in, the River hits the flat hard and weaves all tipsy, slowing down. But it never halts. Read right, the rock shapes and snaked debris show the braids and breaks, the bank drops and backups, the manic avulsions. And on the River's south side, just off Barometer Mountain's bladed ridge, beavers have seized flow from meanders and side channels caught in the undecided rush. Other than Anderson Creek a little ways west, this is backwater, forgotten as the gated Forest Service road above it. Coded FS-3071 on the

maps, this road is open to walkers, though most bypass it for Baker's alpine splendor. But despite the roar of rising motors, I look down at the swamp from my dirt track perch, and feel content.

And from down there, toads come. Toads come in hundreds, thousands, no bigger than gravels or the hemlock cones scattered. Toads come dressed in charcoal suits, in a scraggling scootch more newt-like than frog. They want to hop, but toads come in the only ways they can: brazen and dogged, fern fighters, twig topplers! Starting out by July 4th, this great summer diaspora sends toads out for the great summer forage, perhaps 300 feet higher and 2.5 miles farther than their waters of birth. And when toads come, I have to wait. I do try to go on, planning my stride, but after half a step here and half a step there, I finally turn into the biggest stone, and stop.

Minutes tick
in the new groove
of footscratched time
when I lean my ear
against the overlooked
dirt road. It's public
land where I have
traveled remembering
the fifty-two miles
I drove. But now again
with toad in eye,
I'm forgetting
between woods and water
when I saw the gravel move.

July 31 - To Thunder Lake

Today I took a North Cascades Institute class with Dennis Paulson, who convinced me there is no beaver wetland insect more visible or various than the wondrous order of *Odonata* (from the Greek, for "toothed"). Carnivorous though they are, Dennis has chased them from tropical puddles to subarctic bogs, and become a world renowned expert in their evolution, ecology, and behavior. With his scrupulous eye for their tail shapes, sex moves, color patterns,

and habitats, Dennis has not only written the leading dragonfly field guides, but he has bestowed many species' common names. Thought I wanted especially to see his beaverpond baskettail or the beaverpond clubtail, Dennis suggested our group head to an old glacial lake in southern Whatcom County, made sure we had binoculars and a bug net, and turned us loose. We could bring him our quarry with a story of capture, then learn to look better before letting go. Look, catch, look, release. Each time, a bit lighter in the hunt. I did not find what I wanted, I did find but something more.

To my right, a saffron wisp clung to a cluster of sedges. The light breeze must have been like a gale to it, the shade like a fall. Just emerged from the water, that "teneral" adult was like a tendril in breaking: its pea-shooting reach, back, breaking back, arcing back more, then recoiling in thrust forward and finally, ooching. Below the bulge of oversized eyes, the long body came like a sword far longer and grander than its sheath. At that second, it wore its full weight for the first time. And then the wings bloomed, spongelike in mica-flakes that quivered and shone. And so it remained, flickering above its last cast skin, the "exuvia" to which there's no turning back. Starting today, it was a creature of air.

To my left, at the same time, a female paddle tailed darner etched a submerged log. She stood, half-submerged herself, nearly brimming the abdominal spiracles through which she breathed. Her dedicated endophytic method of laying eggs in plants may have adapted as precaution against predators, desiccation, or heat. This has certainly been one of the hottest, driest Julys that Whatcom's ever seen, but the stylus-like ovipositor that tipped her scrunching abdomen persisted without protest. She planted hundreds of long eggs like rice grains, as if only another life's work. Starting today, she made a creature of water.

As I backed away – the teneral still flickering – I was followed by the female's pseudopupil, the black spot created as I move before her kaleidoscopic set of thirty-thousandsome simple eyes. I wonder if she views me broken, in fractals? Or beautiful, focused as a rainbow in prism? Or perhaps just me, only stronger. I've been glass-clad since age two, with one eye that's acute as a raptor, and the other that's lazy and myopic as a mole. My days with patch are over now, but I'm still training; training to see two things in one sight and one sight with two eyes.

August 11

Red, small, and resplendent, meadowhawks are the dragonfly genus of fall. Relicts of 300 million years, they wear our Latin well; *Sympetrum* ("through rock") come to the pondscape with power and season-shattering distinction. From summer's cusp, they emerge in our last shallow waters, progressively deepening from burnished rusts and buttery golds to matured shades of ruby, cardinal, cherry, and crimson. These are the dragonflies the Japanese call *akatombo*, the ones that Shirao celebrated in his eighteenth century haiku:

> The beginning of autumn
> Decided
> By the red dragon-fly.

Here the "red dragon-fly," the meadowhawk, becomes the marked seasonal word, the *kigo*, on which great haiku hinges. But long before haiku we have known the reflection of season and creature in this insect of ambush. They were ancient when humanity was born. Perched with front-drooped wings on some grasstip or stick, they're always ready to prey on what we cannot see. What we cannot see without those manifold eyes is why we're not ready when they strike like a match and return as if nothing happened at all. Isn't this how fall comes?

When meadowhawks aren't stalking their prey, they're having sex, seeking sex, or laying eggs. Unlike most darners, which have a tropical heritage, these temperate-borne species cast their eggs exophytically, directly over water or even bare ground. Among the many arcane postures for dragonfly mating, meadowhawks are best known to fly in "tandem." Once the male's abdominal tip assumes a firm link to female's head, they enact a tireless string of scoops to scatter the eggs. It’s a masterful performance, and if they're not intercepted by others, or predators, they'll rise and go on until the eggs are all gone.

But today I found a dragon drowned. An autumn meadowhawk, typically the species that lives through fall's last. They can fly well into a Whatcom November, passing first frost. But the stillness of her wet wings was suspect as time stopped. They can wick dews just as their chitin-clad bodies can shed rains, but too deep a dunk will deny this lotus effect. Even in death, each wing stayed independently linked to its thoracic engine, connections that enabled those incredulous, bird-shaming zips. As I held her in hand, it was not her speed that surprised me, but the lightsome wavers of those breezed wings. Each textured pane sparkled like stained glass, iridescing transparence, trading shatter for shimmer.

September 9

The winds are turning. Last week, fall's first rain quenched the summer-stiff trees, but not fast enough to supple them for the synchronous gusts. Limbs broke, and we looked to the gaps to learn the wind's shapes. We'd return to glean the maples for winter, but the weak cottonwood boughs were too punky to burn. Still, we gathered them, dragging them to the bridge and the Upper Pond's dock. We thrust them deep so their broken ends stuck, sunk like pickles for the beavers. Cottonwoods are their favorite treat here, and we thought to spare their risk of overland journeys in the dark.

And though he's a little bolder in the daylight, the muskrat also reaped a harvest. The wind brought down apples too early, initiating Tricia's daily fall chore to hurl one off to this grateful critter. The fruit bobs red and odd in the water, but normally after we give up watching, the muskrat moseys out to drag it up to some hidden edge for his feast. With fall coming faster now, the other motive is to keep conflicts with the bear at bay. The bear may not be stopped, but we want to spread the energy of this place as far as it can go.

September 13 – To Geneva Pond

When I first strode down the slope, I squinted against the slants of light. Caught backlit, the pond's true shape wasn't clear, nor were its dwellers. But I could tell they danced. At first, I could only hear splash taps and plunge drops that left the pond's light pied. Then, the unexpected *ooo-EEK* squeals of wood duck hens broke out. By the time I crept toward the pond's tight west end, and rounded the low, north ridge, the breaks of light and dark took form in color. From the scraggly knoll where I received the sun, the slanted trees' shade hung theatre-like for the wood ducks' show. A few calm mallards dabbled amidst them, but the woodies circled and pattered like oil in a skillet. I tried counting. Thirty-one? No. Thirty-two. No. Thirty-two, thirty-three…NO! I could hardly cleave the accounted from the bandits darting through them, not to mention those perched in the draping alders' shade.

But one thing I knew for sure: the males outnumbered the females. This time of year there is no mistaking a male's gleaming pomp: the sharp white bars and bridle, the livid red irises, and the iridescent, sou'wester-slicked crest. The males were transient artifacts of light, and with each movement, their lacquers and lusters shone a new shade. It's easy to call the female comparatively spotty and drab brown-gray, but only when I neglect that the now-bold male hid

molting and equally dun just weeks ago. Moping about the reeds, his annual "eclipse" plumage had then rendered him weak and flightless for nearly a month.

But that's forgotten now. At this moment, the colors of molting and courting mean less to me than the actual language of motion that is writ across this pond. Because most Whatcom woodies don't migrate south, they waste no time beginning next year's nesting bonds. They'll have a full winter for them to harden and an early spring to renew them, but the choreography of this fall courting is the both finale and overture of breeding cycles. At least one brood has fledged, and many of those immature drakes watch, as I do, from afar. In time I would discern a new dance beginning when males came a-swirling round a single female. At first I thought it fearsome to the female, but with the flick of her head, she incited the real moves to begin. The males instantly began a whole assortment of courting contortions, most memorably a backward bill-jerk followed with a stabbing forward thrust like a balloon-popping mime, all just to show off the blazing white bridle. In another move, the backward bill-jerk was followed by bill jab in the water with a nasal *jib-jib-jib-jib*. This seemed like childish nose-bubbling to me, but I came to see that it's more likely to flaunt the male's bold crest. And the most daring suitors of all were those who came right on up to preen the female, or alternatively, those who gave a shake and started to swim away with a cocky hope that she would follow.

It took a couple rounds to see all this happening, not least because there were so many rude interruptions: chasing, harassing, and boorish embarrassing of their fellows' finest pirouettes, jerks, and jabs. Despite occasional high-pitched whistles, the males' noise seemed mostly a mockery of splash. In their obsession, the drakes forgot all their typical wariness as shoreside watchers, for they sought only the hen's affirmation. But that final motion was always

hers. When she leads her chosen beau away to the pondside for mutual preening, the water falls still. For them, a new season has begun.

September 22

I'm exhausted, weary of creepy-grass weeding and feeling like I've pulled the earth's hair out, all afternoon. There were times when I just wanted stick Erik's chainsaw underneath the dready snarls of grass and cut it out, but Beto just laughed and said "Oh, that would be no good." I know in my head the weed is dominating the wood duck's native food, but Beto is such a big-hearted rototiller that he keeps me going strong.

But now I finally sit where a beaver sat: not too far off the Upper Pond's edge, on a mossy knoll that red-osiers and old gnaws surround. He's been here – I know it – plopped on his tail like a seat through his legs, a gourmand shearing bark like artichoke leaves. I've made it a practice to come here at day's end each week, half in dream and half in doubt as to where these beavers are. Tricia hasn't seen them since July, and I haven't seen them at all. My greatest fear is that the drought has sent them on the dangerous journey through the faint trickling creek, through the back lots and the fields to the lake. And from there, who knows. I sense it's a selfish fear of my own desire, distorted by the way I can't truly think beaver. It's not that I need to see them, but I do want to know they are here, alive and well. Looking out, bubbles rise at odd intervals, and I can't discern if the water is so thirsty for oxygen that mud has to belch it out, or if there are creatures – fish, frogs, even the beavers – that are laughing from below. A few times, I redouble my look, just to be sure they're not raindrops. Nope. And when it grows too hard to stay my eyes on that water, so tepid and turbid, I close them.

In the scattered fall echoes of chorus frogs, each saying *krek-ek* alone and not alone, I remember that today the day doles the same hours it did six months ago. Nights are equal now. I

hear the raspy creak of a raven's wings above, but it's a closer whirring that wakes me up. It's the shadow darner, a dark-mottled dragonfly on dusky lays. She flies as if fan-caught, but rests long. She opens me, and then out of nowhere

the mink
comes prancing
on patrol. He stops –
looks askance, still
in charge. He seems
to think
of turning me to frog.
But soon he goes, after
shaking, showing
his white chin:
Wait. Not yet.

September 29

Three thin cedars crown one, soft stump. Their brittle, grayed base seems neither soil nor tree, but a semblance of both. It's a plant grown sun-numb, a decomposing mixture of life-giving matter. I look between its root sprawls and splinters of dust, through its lichened crust and fallen scales. And yet I can't find where death begins or life ends. Even in those days of its most vigorous, verdant tree-ness, only five percent of its mass responded to light: the root tips that ran blind, the sun-alchemized leaves exploding from tight buds, the scabbard of cambium expanding toward sky. But all the rest did not breathe, reproduce, or feed. I try to imagine this stump's departed ghost. By the girth, I reckon its spar would need half a millennium for its open-earth burial to complete. But no sign of trunk remains, and two springboard notches mark men's work. Two centuries ago, these notches perched men on springboards atop the buttressed, resin-filled flanks; leveled above land's slope they seared their six-foot crosscuts through sapwood, then heartwood and back.

But these tricky three rebelled. The stump became their soil, cradling more live mass than the first tree ever knew. And now they too are passing, for their wrangling roots are drowned. Lichens shroud the upcurved boughs in light's last lifts, the scaly leaves flag and brown. In ten thousand ways, the pond's dead trees retell this story: cottonwoods chiseled to wicks; waterworn roots softening to soil; enisled growths of hemlock and red huckleberry trying, drying, dying. Each falls into a part, for a tree is never singular.

I traipse back to the old pond's center, through a dampened channel that's now a split ribbon of turbid pools. One's rung with long-leaved mannagrass, an emergent plant braced for amphibious life. It's still, deep green on the bank I slide down. While the creek's gurgling once hastened the beavers' work, it speaks below my feet in *squish* and *ese* and *splat*. A tiny channel *eeks* through my boot grooves and I do what a dam does – wet the dry, dry the wet. Out of the swill, a pathetic minnow wretches and flails. By some instinct, ancient as fish, I grasp the creature and ferry it on. I take it to another chocolatey pool beyond us, just a little larger.

But I'm no more a hero of the fish than a feeder of the heron. The bird's dandy, long-toed tracks impress the silky mud of all these draining pools. I kneel to see that hollow-boned stalker's depth, to confirm his floating grace also gravitates to eat. He stays late these days, and fattens on the pond's lean times. As fish collect in the shallows, he comes from the shadows and wades into light. There he is, braver than the raccoon who does not prove his prints. And he sees me, hunches in frustration, then poofs his gangly body off the ground. Feces spray and legs hang loose in all his awkwardness of wings too wide until, *there,* spread at cruising speed, he soars into sundown sky.

October 23

Over and again I ask how I went, where I was. But the hardest questions are those asking where and when I last recalled having the camera. There lies the knife-edge where loss sliced presence from memory, the place where I felt my coatside bulge before hopping over a layering of washup and newly dead leaves that tented an old branch lattice. I knew I could twist an ankle stepping through that, but one, two, three, and I was back in my untroubled confidence. Just below last year's waterline, I walked only for the edge of things, where I'd stay dry and standing. Somewhere, between those nameless heres and theres, the camera must have dropped out, softer than a bootcrunch or mudsuck, pocketed by the grass or the leaves or the water. Five times I traced the steps I thought I knew, and each time I have come up empty. I was sorry for the ten

years with a good camera but still sorrier that it might remain here, its lithium leaching into a place I love. The dew is thick in mornings now, and the rains have come in waves.

The ponds have risen, and though it's likely submerged by now, I've returned to try again. I hunt with a search image, knowing the shape, size and shade of exactly what I seek. But once the discrimination begins to hurt, I see how true hunters prey on the possible as much the known. They must be adept in adaptation, practiced in prospects and ultimately entrusting the hunted to give itself up. Just as wolves look to ravens on the game trail, perhaps I should be looking slantwise, alive to the shudders at vision's brink. When I try, I see how few things in this world are truly black. They are blurs of brown: the earthen browns – those siennas, ochers and umbers which adorn the ancient caves; the botanical browns – scroll of cinnamon, chestnut shell, cream of birch heart, walnut burl; and of course the browns of skin and fur – horseback, deer hide, beaver. Beaver *is* brown, from a blend of the Old Teutonic root *bebru*, and the similar Old Aryan root *bhebhrú* for brown water animal, and perhaps the still older Sanskrit word *babhrús* for brown or large mongoose.

For the time being, I call off the search. I have done everything in my power to save the lost, but the looking is a finding. I dis-cover that browns are in season, that each hue is a word, a texture, an earth. The camera is out there, and in time it will be found. But if that lens is looking at me, I don't want it to catch me in stopped, self-centered time, just looking for plastic. I want to be caught live, sketched in the stance as the dark drew me in, feeling the impression of the bear's half-mooned heel in the mud. I want the frame to widen, to show how the looking led to the beavers' sign I'd sought for two months: "feeding beds" of floating, cast-off chews scattered like bones near the dam's sandy shore. With one to brace and one to hold, I palmed those sticks just as the beavers pawed them, like corn on the cob. And then, at last, there is no frame at all – just

the sound of the wood ducks folding in for the night, throttling fast, wings flaring and tearing like torn sails returning from sea.

October 25

A beaver's work never stops, but it does intensify. These nights mean overtime for these nocturnal rodent repairmen keen on restoring their lodge(s) and dam(s). Many of us unconsciously subscribe to the myth of the domed isle: that beaver lodges are just cagey, round stick-heaps out there in the pond. Rarely does it occur to us pondside gazers that beavers are burrowing right beneath our feet. In fact, one twenty-four million year old race of beavers, the woodchuck-sized *Paleocastor*, tunneled corkscrewed dwellings some nine feet into Nebraska's ancient lakebed soils. In the tenor of proper scientific bafflement, geologist Ernest Hinidey Barbour first called them *Daemonhelix*, after what nearby ranchers called "Devil's Corkscrews." Though modern beavers developed their powerful webbed hind feet in the last few millennia, they still have a knack for going to ground. If anything, our Whatcom beavers are opportunistic, utilizing everything from cutbanks to logjams to rootwads as home's foundation. Every stone, mudclod and stick has potential use, carried nimbly under chin or in dexterous front paws. The beavers here have two homes: one cryptically bored the bank of the deep Upper Pond for droughty summers and thick freezes; the other a half-burrowed and half-stick cloaked cedar stump along the swamp's edge.

Before the rains came in earnest, I became curious about the lodge's construction. The Upper Pond's lodge suddenly accrued boughs of maple, but the swamp's lodge stayed dry, abandoned, and alluring as a pyramid of wood, waiting on a match. Though tempted to know the lodge from the inside out, I quickly learned that entering a beaver lodge demands full prostration; first on all fours, then no fours, in a self-forgetful slough. Beavers clamber with shameless

sliding, but only those of us well-practiced in prayer will be ready for such intimacy of body and earth.

I was not. I was no wiser for rolling pants and sleeves, for my stomach dragged the mud and my back rasped the daggerish sticks above. Halfway in, I thought I tore my shirt, but I couldn't check to see. At first, I couldn't see. Deep inside this damp, ethereal, sedan-sized cave, the only light came from sun reflecting on the water at the two entrance chutes. Once finally within, I could release my groveling hover and accept (with some anxiety) how beavers condone muskrats, crayfish, snakes, turtles and insects of all kinds as housemates. Despite its outer disarray, the lodge's interior was more spacious than I imagined. Its upbuilt floor was dry enough, purposefully rendered with shelf-like chambers for eating, sleeping and nourishing young. But I did not expect to see a spider's gossamer threads in the dim glinted light through the low ceiling cracks. Some would soon be mud-sealed for winter, others left for ventilation. And I did not expect a round stone the size of a basketball, centered like an ostrich egg in the ribbed, wood-vesseled room. Or the black plastic that was no longer trash, but part of their inscrutable tapestry. I imagined, come winter, it would be alive with body-warmth and smoking breath.

Dams, meanwhile, are a pond's raison d'être, givers and takers of life. Dam restorations rely on the mud-locking, stick-hatching methods of the lodge, but the dam has the superadded challenge to foil constant flow. They are an essential winter preparation, but the fact that dam restorations often intensify with fall's heavy rains makes for precarious work. Beavers often have small check dams to relieve pressure in their pondscape, but rarely at the expense of one leading, durable waterwall. Some beavers are able to begin that big one with gradual upbuilding of mud and detritus from the bottom, but in faster streams a phalanx strategy is often more effective. If beavers can get pointed sticks and hefty stones to puncture the creekbottom, they can infill the lattice until the water slows. Sometimes, after initial establishments, beavers tug still-leaved boughs or large limbs in clever shambolic curtains.

All I can say is that such marvels must require inordinate effort. A beaver's life is patchwork, incomplete progress. No animal has mastered the adaptive arts of wattle-and-daub so well. Though many of us seem to have forgotten these technologies of the Neolithic, I am ever taken by how these creatures think with and utilize the materials around them. At Maple Creek Reach, I've recently found the freshest red alder chew I've ever seen. Though I'm always surprised how the russet heartwood hides within the gray, blotchy bark, that cut bled the deepest triple contrast against the dun, drab grass and overcast sky. Though willows and cottonwoods are choice foods here, this alder was meant for the series of damworks on the side-channel sloughs. The wood flakes, like salmon flesh, would be left behind, but this alder would add its worth to the dam. In fact, with one bright bough, I could see they had begun.

November 3

Still here, back under the red-osiers at the Upper Pond. Mostly still, as I gather the day in the sinking sun. It's been good work today, caging young cedars on the mountain from deer. Coming down, eight swans crooned a gossamer shape in the softening sky. But now it's mostly still, except for those bubbles. I chase them around with my eyes and the mind wanders. Then ripples come, and

I finally go
still:
one of the makers
surfaces cork-like
almost a seal,
but with more body
than head. His long
wide tail doesn't slap
for attention or fear.
He sweeps
lazily round, just
for a quick look,
and then rolls
back down.

November 10

First frost last night. The bear yanked down the wood ducks corn trough – apparently for fun – after plopping his applesauced scat right under the Tompkins King tree. It could easily pass for pie filling. And the beavers have also turned anxious in the approach of winter nights. Within the last week, they've felled a huge willow atop the main dam; with time, flow, and decay, it will be perfectly positioned for corking the creek. They've also belly-paved a path just over the pond berm to raid out the hollows between the cedar hummocks, where Tricia planted her precious buckbean and wapato. And finally, they beavers *half* cut the hawthorn just over their lodge. After making these rounds, I stood there in stupor. Was I sorry for more lost trees, or because I could not make sense of their use? Or because of all the wonders I miss?

When Tricia arrived, I shook my head and sighed, thinking I saw all she told me to come down looking for. "But did you hear them?" she asked. I had heard a whine earlier, but I thought it some trees rubbing in the cool, dry breeze. But the question itself honed my hearing. I listened again: the same whining, almost like a wheeze, a hiss, a coo – something between a begging kitten and a goose and an old dog's dream. This was beaver talk. We cannot say what it means, but it means something, familial and foreign at once. We do not attempt translation, but trust that life goes on in darkness. Silence speaks.

November 15

Between rains. They've finally come, fast and strong. Three straight one-inch nights, more on the way. The ponds have swelled and the dam, teemed. Where we can no longer walk, the beavers swim with ease. Far off, Stewart is freshly frocked, stark white against the sea of dark clouds beyond. And yet the trees have not given up their gold. Some leaves of cottonwoods and steadfast birches hang on high, but no less than the understory yellows, spared from the rain-

beaten, wind-stricken fury: cascaras, thimbles, chestnuts, oaks. The rain has rustled more tundra swans (three flocks of seven), and they fly low enough for us to hear their wistful chortling. Far from being countrified northwesterners, their claim is continental, borne through long lit summers on the verge of the Arctic Ocean. I wish they could say all that they have seen. Where the ice is and where it's not, how it moved and what it's like to return to a climate changed.

We think often, but never too long, about this land before the beavers. It's not that those times, and the places that held them, are forgotten. Tricia says the shade was deeper then, and the southeast suite of woodland wildflowers – Solomon's seals, Canada mayflowers, and skunk cabbage – were the jewels of this place. Too difficult to seed, too precious to transplant, they emerged on their own accord, nestled among the second-growth, then growing old. Their mats were swamped, but the fringes rode the stained waterline, standing on edge. In season, those remnants still spread in their slow way, with leaves wide and open, heart-shaped.

Though I am a newcomer too young for those memories, I know that a life with beavers is not for the conventional tree-hugger. Again and again, the beavers train us against our tree attachments and towards conservation that's faithful to the core of ecology: that it's all connected, and that we are part of it. This is the old-growth wisdom, this is the ground of being. And so I must accept the lost wafts of field mint and grape bloom, so thick in my nose just two months ago. They are but mists and traces now, nearly gone. So too the mandala of tracks in the late summer mud – heron, raccoon, bear, duck, beaver – all erased forever. But I also must accept them as not erased, but absorbed. Dry as the creek seemed then, I scarcely knew how the water table was just below it, waiting like the blind floor at a carpenter's foundation. In the beavers' presence, place becomes process, a ritual reenacting the land. And the land does not forget.

November 22

"Go on ahead," Tricia said, "take the road to the right and you'll find a surprise." We had come along swamp's north side for a Sunday walk, just checking in on the side of the property we seldom see. Most weeks, we work along the stream, or in the prairie, or around the ponds, but here it's often too soupy for planting and weeding. The winter rains have gouged a channel at the base of Squalicum, and it banks tight around the house, skirts the orchard, then splays out here in an alluvial fan. Though a few planted spruces have found success in the wet, we come periodically to slosh along the edges, scouting for blowdowns, clearing trail, and keeping the geraniums at bay.

I could not fathom a road in these parts until I saw it – a single earthen track rising up to the clearcut, paved in the green mats of the geraniums and buttercups we work so hard to exclude. They prospered in the sliver of sunlight and the lack of competition of this barren old grade. Tricia does not post all of her boundary line, but this was as clear a sign as any that we had come to the edge of ownership. This old road was a seed source, an access to the clearcut, a fence. Tricia sauntered up with the geranium bucket and an acquiescent sigh. She reluctantly put her chopper away and lowered her bucket, knowing this was far more than she could do alone.

The adjacent landowner does not live on the land, and it's clear that the weeds on his road are not a priority. For years he has aimed to develop the east-slope of Squalicum, but his plans have been challenged by the lack of public interest, the steepness of the mountain, and difficulty of access. But this was not the surprise. Less than a hundred yards further along the road, there stood another series of beaver dams. Another old culvert was plugged, and the boundary-road had become an ally in the dam's impressive thatchwork. We did not know if this was the work of the same beavers downstream, but by the time Tricia's absentee neighbor found out about them, she already had five years of photographs documenting the dams' evolution. Because those

photographs established them as a permanent wildlife habitat structure in the Lake Whatcom Watershed, a major source of Bellingham's drinking water, the Whatcom County Critical Areas Ordinance did not allow their alteration.

This is just one among thousands of cases across the country where beavers challenge us to ask the true meaning of ownership. A property line means a whole lot less when it's submerged, or blurred, by a swamp. Perched right on the boundary between two opposing views of land-use, these dams remind us that water and wildlife are governed in the doctrine of public trust, which says they are managed not for individuals, but for the collective good of state citizens. Day by day, water and wildlife tell us that we are part of a commons, a community that goes beyond any private deed.

There are times we have faltered or forgotten this public trust, but *Barrett v. State of New York* (1917) gave us a precedent to show that property is not just privately owned dirt, but a tool of the human imagination, designed to promote a common good. By the turn of the twentieth century, when concerned sportsmen determined there were only fifteen beavers left in the entire state of New York, they proposed a reintroduction of new animals to prevent the final extinction. They were successful, and in 1906 twenty-one beavers were released near Old Forge, a small town in the Adirondack Mountains. Not surprisingly, the beavers stirred up trouble with timbermen eager to profit from trees the rodents felled. But what is remarkable is the way the state assumed its role as a restorer of health in a land community that was nearly eclipsed. In the best legal poetry I have ever read, William Shankland Andrews' ruling proclaimed:

> The police power is not to be limited to guarding merely the physical or material interests of the citizen. His moral, intellectual and spiritual needs may also be considered. The eagle is preserved, not for its use but for its beauty. The same thing may be said of the beaver. They are one of the most valuable of the fur-bearing animals of the state. They may be used for food. But apart from these considerations their habits and customs,

their curious instincts and intelligence place them in a class by themselves. Observation of the animals at work or play is a source of never-failing interest and instruction.

November 25 – To Fishtrap Creek

In the distant times, when all of Whatcom was a flux in scours of ice and flood, salmon and beaver had their paradise. At Tricia's place and elsewhere these two creatures parted in the land's new forms, but they retain their ancient potential of cohabitation. Of all Whatcom's native salmon species, the coho is beaver's chief beneficiary. I've come with N-SEA's Monitoring Coordinator Cameron Coronado to look into their unique bond at Fishtrap Creek, where the coho's spawning run is just concluding. We count both living and dead, eager to test their abundance and distribution against the effectiveness of NSEA's watershed restorations. The living are elusive; double counts and elisions are easy. But with a carcass we can be "dead sure" of our measures – so long as it hasn't been rendered "unsampleable" by weather, or some coyote, bear, eagle or crow seeking the egg-filled bellies or the fat-rich brains.

It is one thing to speak of outer molts and changes in coats, or to consider the metamorphoses of tadpoles to adults. But it is another thing entirely for a mature, fulsome

creature to alter its aged body – all of it – from cells to skin. Cohos cannot boast the pink's hump or the sockeye's crimson, but they surge in from the sea with the neurons of their olfactory rosette firing like crazy. By late October and early November, this mighty organ of odors reactivates the unique scent-memories of the watershed's rocks, soils, and plants left behind last year. Within miles, even feet, of their birthstones, they garner the teeth and hooked jaws that eat nothing. With innards adjusted for the saltless torrents of home, cohos come into season with their own rufous-streaked luster, blurred in fir-green. Though we style them "silvers" for the bright slivers on fin tips, and Canadians call them "bluebacks," the fish say nothing. The muscular cohos are leapers and fighters, and they thrash on to find and defend their life's last goal: the redd.

A redd is a salmon's spawning nest. No feather down lining here; these eggs rest directly in stone cracks. But if you're thinking *crunch*, fear not. Mother cohos have learned what's required to make life in an old glacier's wake, and the eggs rival the hardness of rocks within minutes of ejection. The earliest arriving females have the best site selection: with the finest mid-size cobbles heading the riffles where downwelling currents of oxygen-rich water deepen and freshen their redds. Such water allies with the mother's tail, when she turns sidelong to beat the stones in a suctioned, shoveling wave. Fine silts and sand collect on the tailspill slope, and if done right, she'll hollow a tear-shaped bowl the length of her body. There she'll wait until a male arrives or wins his fight, then comes along quivering, with mouth agape. In mere seconds, before the eggs harden, they'll be misted with milt, the sperm motes that somehow enter the eggs despite water's rush. And though latecomers will undo her gentled, covering sweeps, that mother will dig on upstream until she's spent all. With all five-thousandsome eggs scattered over the stones, she'll wait on the last ones like a tattered prayer flag.

This year we learned that the three beaver dams on Fishtrap might not bar the cohos' spawning rites. They might even benefit from the dams' late fall strains. In heavy spates, these ramparts slow the flows and sieve the silts and sands that smother. While most all are passable for the cohos' leap, we were surprised to find redds just downstream of the dam on the upwelling currents. There, the dam's pressure forces high-oxygen water *though* the creekbed itself, which reemerges spring-like at the mother's digging. I look long at fish feeling this unseen wind of water through the cobbles. They seek it, skulking eddies and slicing difficult floats in flow, or with quick-flicks that flare the surface-caught fins. They mimic the current that makes them.

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But within two weeks after the return to spawn, these cohos return again. The second coming is earthward, a shameless, selfless death. Most of us do not honor death enough today, but the least I can do is to watch some last thrust to shore, or to look close at the bodies caught shining in the sunk willow basketry of the dark-cobbled deep. Such drowned ones refract in the current, further gleamed by the wind through leafless maples. The time comes when I had to skewer one through the gills with my pugh's single prong, dragging the blistering silver once more to the air. We try for milt to confirm our hint from the toothy, hooked snout: male. The males outnumber and outlast the females now, having aimed to fight the late fall waters in peak, sea-fattened salmon machismo. On this armlong fellow, we note the adipose fin, the fatty flap behind the dorsal. He is wild. Those without it would have been clipped as hatchery fry, then tagged to track migrations. But without tags and with that small, but super-sensory fin in place, he's gone beyond what we know. On other days we might need to pluck some dorsal scales or otoliths (earbones) with forceps, for their concentric rings can be aged like microscopic trees.

But today, it's enough to cut off the tail with shears. He's accounted for. We lower him, and let go.

We may know more about salmon than any fish on earth, but their grace flows beyond reckoning. They are gifts of nutrients packed from the sea, laid under cedars and preyed over by creatures: from wrens to eagles and maggots to bears. Their DNA scrawls across and beyond watersheds, their nitrogen and phosphorus a pulse through us all. Their lives go on as much through this as through the single percent of young who are born and throng to return. It is a legacy that keeps us through the year's darkest days, remembering us to the natural history that would be impossible without their undeserved, undying death.

To home is to go
home to your place
to be born. It will take
a thousandsome miles
to be here. But wherever
you are, you are ready
with next year within you.

December 1

Temperatures have become interesting. Yesterday between 3 and 4 the red rose from 31 to 41 degrees. Last night was the first in six above 23. Now, it's 55. With most land swamped, our work has fully morphed from weeding to wooding. Today is perfect to glean this week's fresh windfallen birch, maple, and cherry. Erik scores the tight-barked cherry (to help it dry), but saws them all in bites of twentysome pounds. Noah and I hustle and huck them down the slope, then haul them and dump them in the sprawling, shedside heap. The shed is the sorting ground, full of green wood, slimy wood, drying wood, some moldy wood, and lots of old, dead, well-seasoned wood. The best waits light in the long, neat rows we'll finally move to the garage or firebox, the last stops before the stove. The dry stacks flake live in moths today, and their

lethargy slows my work. I hate to see them crushed, so I play the brown creeper, probing the warm flaps as if they were gilt gold. Up and down, up and down. The moths I find I hold, then brush to a stack that will stay, for now.

The Upper Pond has earned its agate cloak. Black and banded at the edges, the thin ice blankets the colder denser water. Its concentric frozen skin constricts the pond's festered core. Where margins sinuate and shallows glass, the wood rot and dead maple leaves revive in ambered grace. But the pond's center, I don't get it: why it's misted there and nowhere else, like a breath on a window. Then Tricia says, "that's it!" They are bubbles come to surface from where the water's deepest, where the beavers' cache lies plunged. They retrieve their wood with mouth agape, releasing air in grasps.

Indeed, the beavers' lust for water cured wood rivals my zest for butternut soup. After binging on aquatic salads of forbs and grasses for most of the summer, they need something harder and heartier for winter fuel. A Whatcom beaver's winter is mild compared to their ice-bound kin across the Cascades, but our westsiders still must ready an underwater cache for these whims of freeze and thaw. The water preserves the wood, but also conditions it, leaching out the

less palatable compounds. After dragging cottonwood, red-osier, and willow to the depths, beavers cover their choice fare with less tasty cache-weights like alder, birch, and maple. Though we see how most of these food selections radiate tentatively from their aquatic sanctuaries, beavers are not just land-fearing, picky eaters. They are digestive miracles, with a cardiac gland that secretes probiotic bacteria into an intestinal tract that could unroll up to six times their body's length. And while our cecum is just a pouchy, intestinal cul-de-sac, theirs is equipped for full-blown cellulose breakdown; ballooning through almost all of their body, doubling their stomach. I suppose such a gut should inspire a little more of my empathy when I find their tooth-etched samples that graffiti the trees like the abandoned, half-eaten hawthorn that's now beyond healing. Their orange-enameled incisors reflect the iron-rich cambium they shear in rows beneath the bark. Disuse would not only dull these dental knives, but it could be life threatening; if defective teeth don't cause starvation, they'll keep wrapping round until they pierce the beaver's brain. But thanks to their growing cache, I think these beavers will be whittling all winter long.

December 10

I love these undecided days: wannabe winter skies and fracturing fronts, cloudscapes that are sharp white on dark shade, or sun riven, gaped cobalt. Cumulonimbus are my favorite, all the better when tempered with cirrus. Low as it is, today's noonstrong light bears both, ushering fortysome snow geese to the south. They lasso in loose skeins of twelve or so, shifting and slipping fast over and under, never undone.

But in these rainbreaks, I've been equally curious about the winter lives of dragonflies. Most erupted from their shells long ago, some two to five weeks after being laid. Fueled by their own amniotic fluid, they were extruded like coarse salt crystals, with only a black eye-speck to pepper their bodies. Those laid endophytically plopped down to water, while those broadcast

survivors would have followed gravity's drain to the drink. Dragonflies spend over 90 percent of their lives in this aquatic phase, when we call them naiads, or nymphs. In the warmer months, they not only garnered the tactile precision requisite for wingless scuttles about, but they also wielded the ejecting lip that can lash out to spear food. Anything, from tadpoles to insects to small fish, is fair game. If it doesn't fit into their gaping maw, the lip will cut it down to size. The rectum they use to digest such quarry is equally impressive, but not merely for absorption alone. It's an organ that also helps the little dragon to breathe, and with a bellowing squeeze, it avails a quick escape of jet propulsion.

In their many months occupied with these revels of nymphdom, the young undergo 9-14 successive molts, called instars. Each slough of the old life yields but another one that is just as alien, drab, voracious, wingless, patient. Most of these transformations, and the feeding frenzies that foster them, occur soon after entering the water. But with the advent of winter, the changes slow. The nymphs don't die, but as their metabolism wanes with water temperature, they dig down and latch onto stones. Now is this time of diapause, the insect's season of developmental arrest that comes when days and degrees decline.

I spent the afternoon scouring the slick banks with a bug net, seeking out these sedated dragons. Wiser aquatic insect seiners avoid winter surveys for reasons that were obvious today: the ice-rimmed water was not only pretty darn cold, but it was a turbid gush from recent rains. I went to where I thought that eggs were laid, but the memory itself became a wash. Above the beaver dam where I thought the meadowhawks had flown off from field mint, the creekbottom felt sandy on my soles. I shuffled over the drowned sediment and scooped a few waterboatmen and backswimmers in the net. Below the dam there were more gravels, and I riled up some midges. I went on in this way, trying wherever I remembered a dragonfly was, or thought one

had been, but I didn't find a single nymph. But I did find a wonder. A wonder for the wiser, patient winterers who come year after year until that final instar. Those are the ones most alert for light's longing. Come spring, they will be the ones like light breaking ice, emerging from bodies of water.

December 15

Perching in leaves near the Upper Pond's lodge, the skull looked. It did not gleam, but the undeniable bone-white sharpened against the brown leaves at dusk. Along with the four vertebrae beside and the two jaws broken off, all of it looked with a fleeting, old-snow gaze. All of it looked in that milky way – except for those black-topped, flat molars and those curved, brown-burnished incisors. I gulped deep, for I knew it was a beaver.

But a skull is nothing but questions: Who is this? How did it die? When? Where from? Why? I rarely have the chance for these inquiries because I am not vigilant or fast enough. After carnivore feasting and the leaching of weather and water, there are troves of insectivorous undertakers who evolved to hasten breakdown. Most notably, the *Nicrophorus* beetles (from the Greek *nekros*, for "death" and *phorus*, for "bearing") whose larvae live by the dead their parents bury for them. Once underground in this acidic, wooded wetland, it should only be a matter of time before the bones are pulverized by tree roots and swallowed by the calcium craving earth. Feeling like I beat earth's squadron of deossifiers for once, I became the bone-bearer, delighting in the gentle clink and rattle as I carried the treasures home.

Looking down to the skull lamplit on black paper, I found it triangular with a rough, elegant symmetry. I became grateful there were none of the bludgeon cracks or bullet holes that would be a trapper's signature. It did not seem crushed by a car, fractured by tooth or talon, or even gnawed on by other rodents seeking brain food. There were some pin-prick borings into the

upper mouth, but it was so woundless I felt obliged to confirm my smell with mint tea to ensure decomposition was complete. The drafts of steamy mint came strong, but I kept sniffing until I fixated on the sutures' waving crannies, delicate as Whatcom's coastline.

And through its riddling holes and gaps, I sensed more hints of life. Smell seemed keen enough, with its short, slender nasal bones at level with the skull's flat top, notched just above incisors. The high, slim auditory canal suggested the creature was equipped for hearing at the water's surface, though its frail, moderately inflated auditory bullae say not so well. And those wide, side-angled orbits told me this creature's sight aligned with animals who are hunted more than hunting. What this little beast could hunt seemed mostly vegetal, scythed in the overlap of those impressive top incisors clinching down and over the bottoms. The blades were sharply beveled, whet through use. But those back molars told all. They were masticators, muscled with strong-jawed grinds for tough fibers and pulpy botanical fare. But when I counted all the teeth, there were sixteen! A beaver should have four extra premolars too, totaling twenty teeth, but they (or their holes) were nowhere to be found.

It turned out this 69 millimeter skull is most definitely the beaver's small, slim-tailed cousin, the muskrat. Though muskrats are not tree-chopping wetland engineers, they have greatly benefited from the beavers' creations. This muskrat may have once been a lodgemate with the beavers, and likely the one we saw last the week of October 13, v-ing on the remnant open water. We guessed he fell prey to the mink, but I respect him more deeply now that I've held his small, tender braincase in my cupped hands.

December 22

When I lived in Maine,
I walked hundreds of miles
one down one back each day
on a dirt road to glazed mudflats

where I watched eager gulls
elide the eagle's gaze,
watching the tide as the cold
girl and two dogs in the truck
watched her dad with his hands
in the sunstruck clay, raking
for bloodworms for bait.

I thought Bobby wormed too,
at least that late solstice day
when he came to the office
hipbooted with tomcod in mind.
Best speared through river ice
now, at the edge of dark
above tide swelled on moon's rise.
Christmas fish, he called them,
coldwater spawners, gifts
for chowder. I liked Bobby,
the way he brought an old story
to work again. But when I heard
he also trapped beaver,
that seemed colder.
Later, he shared the meat
and none would eat. Because it hurt
to see creatures made game,
I held the flesh that lay separate,
and for the lives disrespected
I ate.

Winter is story season and trapping season, and again I'm caught in both. This may be solstice, the name the Romans gave for the apparent "stoppage" of the sun, but here it's a furious swirling of light within dark. In our mere 8.25 hours of daylight, the Doppler's a tie-dyed twister again, and for now we're outside of the still, rainshadowed eye. We're shrouded in the first green band, before the splotching of deluged yellow trending eastward, to the splattered streaks of cyan mountain snow. But however the sky drops fall, it's hard to hide these days. Tracks show clear on mud and snow, food grows scarce, and routes turn familiar. Even inside, all hoveled up with memories and longing, I'm circled in uncountable tracks. Across twenty nine years, eight states, and sixteen residences, my prints have blurred with the kin and the lands that I've loved. They've

fanned out, hardened in ice-relief, rained over, snowed over, melted. Now, long after my parents' split up, they're living in homes I never did, each less than 50 miles from their own hometowns. Dad's not far now from where he once trapped muskrats in Maryland to help pay for college, a time when his counts from a day's set were the best he could muster to cope with his dying mother. I never knew her, but if one of my parents had cancer, I'd want to clutch steel and burn my pathetic hands in icy water, just to know how it feels.

It's easy to believe, as I do now, that commercial and sport trapping should have no place in human culture. Whether it's the "incidental take" of non-target species or the way cash turns us transactional, we can't afford the bycatch or trophies or bait. But I also want to believe in the sacrament of subsistence, and I want to understand trappers like Bobby, or my own Dad. Though I shudder to think what country or coat their skins have ended up in, I can't deny my own hides of petroleum, nylon, and polyester. And tonight, I'll be all wrapped up in the Hudson's Bay Point Blanket my grandfather gave me, a heavy mat of one hundred percent wool. It is a blanket not unlike those that native people most sought from the zealous fur traders. Buffalo hides were the currency on the Plains, but here, blankets were bought with "Made Beaver": the worth of one, well-dressed, winter-thick pelt from a male beaver.

Bobby knew beavers intimately, and he told me he set for something more than the money, something more than the killing. If we are to be preyers, that something more is what we must keep, that something more saying no creature or person or place is for the taking. The beaver is gift, a life redeemed only through bonds of compassion and need. They are bonds among animal insides that must stay warm somehow. Our animal insides, our *anima*, our soul. The soul that knows the sinews to cut, the bones to break, and the heart to leave out, for another, in the cold.

January 15

Here is what I didn't see:
where she hid her scent
where he'd know her heat.
She'd be ready all night
for those minutes,
at two years old
when the two
went to water.

February 1

Somewhere, where groundwater seeps round a boulder's heel or down through a sword fern's duff, a western toad wakes. He's been holed there a month or two, wrapped in a miry old squirrel cache now overstuffed with leaves. It's been drafty and dank, though his south-facing slope hid from the worst northeast gusts. He hasn't seen the snow retreating, but now he feels its trickle quicken on his toes. Some Pacific chorus frogs are already yakking away in the lowland pools and puddles, but this toad rustles out for silent downhill travels at his own speed. He's got a pond in mind.

The western toads' homing journey to breeding ponds and other permanent, shallow waters is a little less perilous than summer's foraging diaspora. For those born last year, life has actually improved quite a bit. Because they now travel solo and are more visible to vigilant motorists, the greatest hazards of migration are somewhat diminished. And while this visibility makes them more vulnerable to predation, these new-adult toads have acquired a mild "bufotoxin" which some less-desperate predators find distasteful. The toad's own eyesight has also improved since metamorphosis, which helps them compass their course by the arc of the sun. We faintly understand how this solar navigation works, but somehow it funnels these far-flung pilgrims back to their ponds.

I haven't found one yet this year, but I'll never forget another late February encounter, when I met a male eager to be early at the homecoming party. His first defense was of one of disguise, worn quite well in the dun-dead maple leaves. And with it, his second defense: stillness. Stillness with a stout body stiffened in a staredown, one of those shall-I-outwit-or-outwait-you looks. But even with elbows knocked out and lanky toes turned in, I thought that little wannabe wrestler could be tamed, just for a minute. His body's topography enticed me: the knobby warts, round as old mountains; the brown-blotched skin like a leathery glove. And I thought he'd fit my hand so perfectly! When I first clasped him softly in my palms, he seemed accepting. No squirming or struggling, no uttering of the "release" chirp he'd use if mounted by overaroused brethren in the pond. He was not heavy, but in those few seconds I felt like a surgeon with a heart, filled with precious, palpable life. But the moment stopped as it started, and the body released its great defensive finale: *pee*. As the wet oozed warm through my fingers, it took all I had not to throw him away. With urine, he won. I stepped aside, and he waggled on.

February 9

I'm not sure if Tricia trusts me with the axe. She's probably looking out for me; she may have even seen my left hand, full of four kitchen wounds and a woodcarving scar. But despite the slippery acorn squashes and the poplar bowl that have co-opted my blades, I think few chores surpass woodsplitting. Erik's prowess with the chainsaw achieves noble, patient victories, and he makes the splitter's work possible. But given the choice between whining out against-the-grain wins and cleaving down wood-years in long, singular cracks, I'll always choose the latter. So when Tricia dragged out a wine box busting with mossy old boards and said "make some kindling," I nearly wept. In just a few strokes, I learned that I only had to lightly notch the axe in the board, then lift both together and thrust them back to ground, allowing pressure to do the

work. It is such a beaverish, empowering act, and so grand to feel a sliver scale away, to hear it fall clean and dry, then glisten like a trap for the sun. I knew that cedar held these straight-grained secrets, but they were stark against the dust-clung, stained outsides. In time I saw my boards were not mere boards, but walls of wood duck boxes. Looking around at my splintered work, I sensed the birds once born from my brokenness. Life had been their shelter, their shelter now our heat, our heat our life. The life was flying, flown.

March 1

When first hatched from their pebbly, pre-birth burial, a coho salmon's journey is not upstream or downstream, but down. Down, down deeper into the dark safety of their birthstones, where no dipper may reach. Big-eyed and bloodshot, this newborn "alevin" coho retains its nourishing yolk-sac, a maternal endowment that hangs like a tempting honey bead. When fully absorbed, the little mutant becomes finny and fishlike at last, a little "fry" who is ready for its second epic migration: up. Up, up and into the very thrust of the current. They do so at night, and quickly learn the value of drafting in the flow-break of wood and stones. In the light, they learn to be shadows.

Those upward movements must be like opening a door to a howling tempest. At 30 millimeters, the fry are dwarfed by and drawn into the frenzy. Risk and opportunity are equally and everywhere present. Every movement is sight driven, a constant hide or seek. A dragonfly larvae may be small enough to eat or big enough to be eaten by. Some fry may find protection from predators in a schooling pulse, but others may turn territorial, even cannibal. And those former fry who lived to become this year's "smolts" are in the swirl too. They've stretched out to over 10 centimeters by now, and may predate upon the youngest. But they’re mostly readying for another nocturnal migration: to the sea.

Though ample space and safety are always prime concerns, the thousands of mixed-year juveniles rearing in beaver-shaped river channels have life pretty good. These places draw lots of good bugs for fattening, and the beavers' porous dams moderate flashy spring flows and stave off droughty summer heat. Except for an elementary school's playground at recess, I can think of few other habitats where a species' young life phases intermingle and transform with such verve. Indeed, some research suggests that the first and foremost blow to coho salmon populations in our region was not direct harvest, but the fur trade's eclipse of beaver-shaped juvenile rearing habitats. In the Stillaguamish River watershed, the National Oceanic and Atmospheric Administration estimates that winter smolt production potential has been reduced by 86 percent from the pre-fur trade contributions of beavers' work.

Such assertions of loss make it hard for us to recall what it means to face the current. What stage are we at in this journey we call life? Are we hatching and bloated with egg sacs? Do we need to eek out of our stones and face the mighty flow? Or is it time to turn tail and let the flow sweep us to sea? Perhaps these questions can't be answered for all, but only for the day where one happens to be. In the northwestern Alaskan interior, the Koyukon people have a tradition of riddles that help diffuse and illumine many of the paradoxes and promises of their own complex world. They always begin with "Wait, I see something" then follow with a statement and response. One goes like this:

> Wait, I see something: I drag my shovel along the trail.
> Answer: A beaver, with its broad, bare tail.

March 14

I built my first nestbox when I was ten years old. With a motley assortment of scrap from the lumberyard, one hammer and a coffee tin full of nails I went to work. I had no blueprint, but was full of ideas about how I'd welcome all the avian world to safety. There would be an awning,

and several perches, and of course a place for laying. I happened to remember that an entrance would also be needed, so I left two boards agape and drove an extending plank out from the bottom board. By the time I called it done, I couldn't imagine what bird it would ever invite. Adding more nails didn't help, nor did the fact that some poked through the dark prison I had wrought. That was the last nestbox I ever built.

When I look at all the boxes this time of year, I can count my mistakes. Each box has an entrance hole just fitted to the wood duck's body, and with a cavity just deep and wide enough for the capacity of that bird's brood. None are painted, and though I find those with rustic moss-tops chic, the best ones are shingled or clinker-roofed to ward off wood rot. Back in the day, Tricia had friends all lined up for the making: one would skim boards out of the cedar butts that loggers left behind, another would assemble, and still another would hoist them up and heave posts down.

Maybe I'm just jealous, but I think it a marvel these wary birds willingly nest in our angular creations. On square posts skirted with raccoon-proofing steel, the boxes look awkward enough, all the more so upon a rounded trunk. But whether they're scornful or thankful for our mimicry of their natural architecture, few trees are old or dead enough for a hen to be happy. Without a nestbox, she needs the help of a pileated woodpecker for cavity excavation; a cavity at least eight inches wide and two feet deep, preferably with a few inches of crumbling shavings to nestle the first eggs among. Too small, and the female won't have enough room to incubate her precious dozen. If the entrance hole or the bole is too big, her nest could collapse in decay or be prone to the reach of a ravenous raccoon. Though I'll always lack her rigor and discerning eye, I've yet to find a single nest tree that seemed to meet these requirements.

And when I look at all the boxes this time of year, I can count some successes. Hens are now flying about with the drakes in tow, seeking and selecting the place they'll call home. Two months ago, I laddered up to the last of Tricia's annually checked nestboxes to clean and refill with fresh shavings for spring. There was no telling what could have been inside – an unwelcomed squatter, addled eggs, or even a dead duckling too weak to scale up to freedom. But for all my expectation, I found nothing but a soft, shreddy bed. I raked it with my hand, and it felt forgiving, ready for this day.

March 26

Last week Whatcom Land Trust hosted a talk by local funeral director Brian Flowers. I came full of half-truths and curiosity about his subject of green burial, but I learned its aims are simple: to be a way of caring for the dead that minimizes environmental impact and fosters the conservation, even restoration, of land health. Biodegradable materials, along with the absence of embalming chemicals and vault casings, are the minimum criteria for a burial to be "green," but there are infinite ways to customize the practice as a restorative ritual for the people and place involved. Loved ones can be intimately involved in the process, and they can also have the confidence that the passed will be equally intimate with the earth, directly enriching the community of its life. When a person is cremated, most of the body's organic wealth becomes lost in the air and the remnant ashes become too concentrated for nourishment. But when interred in the soil without formaldehyde or artificial encasements, the bodies in a green burial cemetery can foster a wild meadow or a vibrant woodland habitat.

Throughout Brian's talk, I found myself aflood with unexpected tears. They were tears of joy, tender to the simplicity, beauty, and promise of the practice. But they also came from the cycling photographs Brian shared, from the green burial of Tricia's mother, Lorrie Otto. The

images were there for his periodic anecdote and instruction, and for most viewers they were background. But they softened me like warming snow, for I had never known about the green burial of Tricia's mother, let alone how she had been such a conservationist in her own right. Ms. Otto played decisive roles leading campaigns against DDT and for the creation of Wild Ones, the neighborhood-cum-national organization dedicated to restoring lawns with native plants. Widely respected as the "Godmother of Natural Landscaping," Ms. Otto was inducted to Wisconsin's Conservation Hall of Fame in 1999. I knew Aldo Leopold held that honor, but seeing those photographs cycle through again and again made me feel encompassed by a kindred spirit, connected through those with whom I work. Beto was there, helping to carry Ms. Otto in her weight-bearing shroud. Carol too, smiling and determined as ever to help fill the grave. Seeing those pictures, I wanted to shout out in that presentation: *I know you…thank you, thank you!*

In the wheeling year's phenology, birth has more prominence than death. Reproduction is the foremost goal of wild plants and creatures, and each species has evolved to bring its next generation to the world when it's most ripe for new flourishing. We can generally expect the season when eggs will be laid, when seeds will sprout, or when young are nursing. But for most creatures, death betrays all expectation. Despite exceptions for the passing of salmon or insects or annual plants, most phenologists deal in beginnings, not endings. Indeed, I cannot say I have ever found an ending in nature. Even the varied thrush who first inspired my project – his sudden death is still with me. Learning about green burial has helped me to see that death can also be an opening, a new beginning for life to live on. My urge to freeze the bird had been my failure to accept that no creature and no season can truly be stopped.

So I decided to return my cold bird to the world again. I could have just thrown him out for the raccoons or coyotes, but there are times when a ritual feels required. I wanted this bird to

have a green burial, and I wanted him to nourish the beaver wetlands that I have come to love. So I walked and walked around the ponds, looking for just the right place. I thought at first to plant him in the knoll where I had waited time and again for beavers to rise. I would cut a long, straight shoot of last-year's red-osier growth, and dibble it down to be the beaver's future food. But then, as I walked by the lodge, I spied one of our unplanted evergreen huckleberries from Tuesday. It had been our spring planting spree, and Tricia had scattered the pint-size huckleberry, kinnikinnick, salal, and Oregon grape plants around to add some new native diversity for the year. But this one had been forgotten, hiding in a sword fern's shade. Some twenty feet behind the lodge and the ring of red-osiers, behind the hawthorn the beavers' half-hewed, the spot would be a shady edge where this hardy plant might thrive. The soil was loose and rich, and after I nested my thrush deep in an arm-length hole, I layered him over with earth before adding his living stele. Far better than a headstone, the fruit of evergreen huckleberries would be tiny, clustered morsels that cling to their stems through winter – precisely what future varied thrushes would crave.

April 18 - To Terrell Creek

Making habitat is not easy. We may never know just how beavers do it. Sure, we know the tools of the trade: hard headedness, mighty masseters, dexterous paws, adzing incisors. We even know that an adult beaver brain, which weighs about as much as eight or nine nickels, has an encephalization quotient on par with a horse. But though this post-mortem ratio of actual and predicted (for body size) brain mass may suggest the capacity for "intelligence," it illumines nothing about a beaver's cognition in its daily doings. Before we ever bumble into their plans, they must face endless questions: Which tree to fell? How much food storage is needed? What's the water-holding capacity of the land? Is the dam about to break? How to fix it?

I'm probably thinking too hard, blinded by our imposing human cerebrum. Meanwhile, today I joined 195 of NSEA's eager Earth Day volunteers, planting trees (a thousand trees) upstream on Terrell Creek. Out of them all, maybe one will become old-growth in a few hundred years, outlasting the oil refinery billowing behind us. Some may be felled by the beavers that live downstream. Still more may drown or drift down to them, a new piece of a dam or a home. We don't know. Making habitat is not easy.

Today we plant with the refinery
in sight. From town the distant stacks
formed clouds now looming large
above complaints, words that feel
so frail. For here we drive a car
by the place that makes it go.
We hear the refining drone, idle –
waiting to pass on the one-way road.

Yesterday we should have known
our work was not to save.
But then our shovels shone,
our hands were clean,
our dream of earth
unbroken.

But today we plant with the refinery
in sight. Remnant blackberry roots
net in knots our work, remind us
who and where we are, what we can
and cannot do. Not much. But we can
hope as we hear the yellowthroats sing –
masked by the leaf out of willows
beyond us. Incessant, invisible.

April 21

I scrape and bump
all the wood
of the swamp –
in the poke boat
half a paddle
then float –
waiting for
not a ripple
but a sunstrike –
just right.

April 25

The long pond skim, then a wing pitch up, round, and *whoosh.* Then down again, then banking high, all curves, recurves, and bows. For minutes I turn my head a-bobble and make my eyes listen to birds' directions. But these violet-green swallows are worth watching, both for the movement and the flashes of their names' two colors in the light. Their arrival in early March signaled spring in my calendar, but not a sighting goes by without feeling the year reborn again.

But halfway through today's circling swallow therapy, my wobbly neck stiffens to the sky. Hundreds of other aerialists are also at work. They lack the swallows' sinuous skirting and delightful twittering, but these darners have their show. They dart and jerk in a dense cloud, clearly among those dragonflies we class as "fliers" for their need to keep whirring on wing for their warmth. It's not a cold morning, but it’s a shady one and these sun-lovers are seeking the fresh hatch of mayflies swirling towards the treetops. Were they closer, I might be able to confirm them as common green darners, one of our few early spring migrants who chase the sun

northward in spring, charting migrations up the coasts and mountain chains. They're here now to refuel, then breed fast enough to send new immatures surging back south in the fall.

A modest, blue-dappled, azure-eyed male California darner might be the only other local I expect out in April. He'd be sleuthing low and lonely about the pond, waiting for a first female with whom to inaugurate a short, subtle breeding season. I'm rarely savvy enough to notice the California darners' debut, but theirs is such a contrast to the erratic fistful above me. Squinting hard, I stare up for the field marks of the common green darner: a long, cobalt abdomen and the wing-pumped, grass-hued thorax. But down here their blue is an impossible shade against the cloudless sky; their green a dark silhouette in the sun.

And yet, the behavior marks these as common green darners too, for not many others "swarm-feed" so vigorously and early in spring. The swallows may be nabbing a few of the less fearsome dragonflies, but most darners are more efficient insectivores than the birds. They clearly do not need to scoop *through* the mayflies they assail; they lash nimbly *within* them with surprise that recalls the ejecting lip they wielded as nymphs. Sorry as I am to see the mayflies' few hours of winged life so quickly eclipsed, I love to see the weave of names through lives. Within the hazy multitude of mayflies, there are hundreds of darners and less than ten swallows. Each darner is a concentrated mayfly; each swallow, a distilled darner. Through all, a solar thread.

May 9 – Along Bill McDonald Parkway

Walking along McDonald Parkway, I thought of the salmonberry flowers I saw April 6 along the side channels at Maple Creek Reach. It's been over a month now, that moment I forgot to record. How do I miss so much that is with me yet – that budburst, that newborn wren nestled in the ferns, that mayfly with hours for a life? What makes anything worth its moment in the

sun? As for that salmonberry, I still can tell of its magenta bell flower, how it hung so tender and thin. It was early and a morning of dew, and though some other petals stayed packed tight, the wrinkled leaves widened like a mint on cinnamon, stubble-crooked stems. All was seasoning, and that deep flower carried a bumblebee's buzz.

But now, as another bee tries to make a flower fruit, another being tries to help, in her own way, too. Watching, it seems like the old way of "slow match," the ancient trick of keeping embers alive to avoid the intensive process of restarting a fire with a bow drill or flint. There is no record when the tradition began, but in our climate the skill meant survival. Dried root fibers of bracken fern were commonly wrapped around a smoldering coal then stored in shells or cedar bark, ready for travel, renewable with breath.

You ferry her like fire,
the kind once kept in clams
full of tinder, fiber –
fern roots and cedar bark.

At first I could not see
this bumblebee, so cold –
flickering wet within
your hands, her shells.

Spring's fits of rain are snow
to bees, yet not quite death.
She inspires, shivers,
knows to wait for sun.

Stranger, let's hide her –
find leaves to nest her in,
dry below the Oregon grape's
yellow flower.

May 12 – To the Agg Ponds

If I had only been around to counsel the woes of Narcissus, I would have told him to come here. Park at the gate, I'd say, then stroll the graveled road that's lined with ripening

thimbleberries, keep going right past the pyramids of aggregate stone that Seattle City Light has crushed, and come to the pond. But this time, don't just look at it: look *through* it. Had Narcissus done this, perhaps with some polarized sunglasses, he may have saved himself from himself. Without the glaring reflections, he might have seen the larval amphibians, thousands of them, balancing life in their own desperate way. Perhaps he would have known even better than I, how these tadpoles were *amphi*, for "both or two" and *bios*, for "life." With their hasty transformations and evasions of the fossil record, tadpoles have perplexed naturalists for years, many of whom subscribed to Thomas Hutchinson's 1796 theory of the "frog fish" he dubbed *Pseudis paradoxa*.

But less than a month ago, this place was alive with the groping and wrangling that brought these little beasts to be. As hundreds of western toads toddled in from their sunwise sojourn, the grand orgy began. While the males lack the vocal sacs to advertise themselves, these western toads' annual fidelity to and timely convergence at a permanent pond made noise unnecessary. Soon after a compatible reproductive clasp (called "amplexus") the female strung out fertile necklaces of linked eggs along the pond's warm-watered edges. Looped around lilies, snaked above and below the surface, they became a profligate spew of creation.

Now, two weeks later, this jellied drapery is bursting into birth. The eggs have started popping like inkblots, quickly turning into hydrodynamic, pondlined whirlers. While not quite so orchestrated as a flickering school of coho fry, the sooty young toads pulse together, ably churning every vegetal scrap the water has softened. Like little vacuums, they inhale all through square puckered square snouts and into the voracious *manicotto glandulare* that siphons food into their acidic stomachs. It's a simple digestive process, but endlessly absorptive. Some among this unsated alliance may turn carnivore, even cannibal, but their shared movements are mostly a

boon: while they may taunt the herons' beak-stabbing and dragonfly nymphs' jaw-spearing more often, the predators' successes are fewer.

Though far from the warty, rubbery-footed adults they will become, some of these toads transform as I watch: a tiny toe here, a shrinking tail there, something bulging, bodily. But a tadpole's growing pains are never truly felt. What we see outside is only half the change. For a landed life, the western toad must reform nearly every internal function. Trading gills for lungs is a start, but no less than the shortened carnivore intestine or the genitals or the hormones to harden the bones.

May 19

A beaver is not just any old beaver. Some native languages have many words for the beavers' seasons of life. The Koyukon of Alaska's northwest interior had distinct words for a "male over three years old," a "large beaver," a "female beaver," a "kit one year old," and a "female beaver with young." Without the Koyukon's attentive intimacy, size and weight are difficult guides to the boys and girls, but they still say a lot about age. Beaver birth is starting now, with each baby no heftier than a bread loaf. I imagine each one is like a dense, hearty *vollkornbrot*, though most of us won't see the young "kits" for five weeks. There are normally 3-4 newborns per year, and within days they'll be gnashing and splashing in the lodge, but their anal glands won't be primed for the big waters. Those glands secrete waterproofing oil for lathering, an essential to be warm, smelly, and sleek. Beavers live a nidicolous life, one where the kits wait in the lodge like a second womb, nursing and learning the importance of family.

Beavers are such family-first creatures that as many as three generations may live in one lodge. While the mother reigns as queen milk-giver, the twenty-pound yearlings often stay to help with cleaning the lodge and grooming the newborns. And when the kits start teething by the

end of two weeks, those altruistic older siblings start sheaving twigs and tender grasses lodgeward for bedding and browse. These treats wean kits from high-fat milk so they can finally emerge and begin the feast required for the first overwintering. In these crucial times, the kits also learn to call out with plaintive whines and hisses, and to be called with the language of tail slap. On open water, that sound warns all to seek safety, wherever that may be. I've heard it, and undoubtedly caused it, a few times in my life.

After the first year, the young continue to pack on about ten pounds annually, until the gain plateaus in their fourth year around forty pounds. The father may take brief respites from the lodge bustle, but he too joins the others in this "cooperative breeding" alliance so unique in the animal world. Part of his role is also to mark the territory with scent mounds, which are essentially heaps of debris and pond-dredged mud that are spewed with a mighty dollop of castoreum. With over 45 chemical compounds, this glandular concoction from the castor sac is like a turpentine fingerprint to fend off other beavers. So remarkable is this secretion, that before the discovery of the castor oil plant, it was prized for perfume, medicine, and as one of those mysterious food additives that yield "natural flavors." But for beavers, poor eyesight does not deter them from "seeing," and heeding, the scent signs clearly.

The scent mounds are chiefly meant for the dispersing two-year olds who often get a parental nudge to move on just before the newborns arrive. For beavers, dispersal must be a dangerous, lonely gauntlet, full of currents, bears, traps, drought, coyotes, drainage ditches, sewers, golf courses, mountains, cars, treelessness, and more. In fact, low-gradient, well-wooded wetlands are so rare in most places, that it's a downright miracle for those who find productive habitat without rival beavers and with friendly people. And doubly so is the marvel of those who find a worthy mate arriving with the same mission. At the extreme, such a prize might demand

30 miles and nearly six months, each step and day of which cuts at the time needed to recreate a watershed before winter.

May 25 – To Edfro Creek

I have heard this before: a circling liqueur of song, spun like a half-trued wheel, runaway and tireless, fluting down a tunnel. Before the word *season*, such a tune must have rung us, echoing through all of our bones. If our first season-seekers were anything like me, the sweetness of birdsong or berry taste must have resolved more secrets about the year than could be found in the weathers' whims. I've never had a true epiphany from a heady, mountaintop trances, but I do approach them with moments of direct coming-to-senses when I'm mired in the muck of my life. I like to believe that the awareness of seasons came in places like this, where one can poke along some wilding edge of streambank or swamp. It is here that lost gems are remembered, deep within tangles of green.

No return comes so powerfully as the synchrony of the salmonberry and the Swainson's thrush. Before the bird ever became equated with a vagabonding Victorian naturalist (who might never have seen one), native people across our region heralded it as the "the salmonberry bird." Rooted in their home on the northern shores of the Salish Sea, the Saanich have a version of a widespread story across the Northwest Coast. Violet Williams and Elsie Claxton relate that

> One time, Swainson's Thrush invited Raven to her house for a meal. She told her kids to take their baskets out and pick berries. She started singing her song [referring to the four colour forms of salmonberry: *nenel'q'<u>x</u>elíq*^{w} (darkest), *nele'pqíq*^{w} (very light), *nenel'k*^{w}*emíq*^{w} (ruby), and *nenel'px*^{w}*íq*^{w} (golden)], then, "*x*^{w}*ex*^{w}*elex*^{w}*elex*^{w}*esh*" ('ripen, ripen, ripen, ripen!'). As she sang, her children's baskets filled up. Afterwards, Raven said, "You come to my house." Swainson's Thrush did. Raven told his children to go out with their baskets. They did that for their dad. Raven sang and sang but the baskets never got full.

He may be the wiliest Trickster along the Northwest Coast, but here Raven's pride and greed became too much for his own good. It's grace, not will, that makes the ripening song. Sly and

slow, the thrushes entered the sea of sharp-toothed leaves a few weeks ago, scouting for midstory nooks to build their sturdy cup-nests. You might find such a nest – often with alder twig ribbing and soft lichen lining – perched amidst salmonberry stalks. Although the stalks have value to the thrush architects, and we can snap them to eat like a celery treat, the berries have mutual merit as a first fruit. While some call them watery and insipid, there is no denying that it's a fruit – before solstice! A sweet crystal of the cold-seasons distilled! Their tender, hollow-centered drupelets peel off gently, like a tear-knit hat. It is a wholly recreating taste, even – or especially – when sharing thrush-nicked one.

I have come to be in season's name,
turned and almost echoed once a round.
Their Latin signs a secret better known
as reckoned here, by pulsing light
through land of all I love, all I am, all

I have. Come to be in season's name –
in time beheld as holy days,
of hours re-spent to root
leaf, flower, fruit. Watch and wait
for salmonberries as thrushes home to sing

I have come to be! In seasons name
their song is rung as each sweet sphere
first swelled after winter's rain and lack
of long sun days, through snows
of cottonwood seed, the honeyed scents

that beckon now, now listen:
I have come to be in season's name.

June 14

Fledging is one of the most profound miracles in the wood duck world, the animal world, and, all the world. But for all its hype, it's a seldom seen affair. It must be the hen's most anxious hours, and the last thing she wants is to become a spectacle. Fledging centers her year, and preparations for it began months ago, when she gorged on beggarticks and pondweeds, on

winged maple samaras, and our meager acorn mast. Her preparations hastened with her nest site adoption, which roused her binge on new-hatched insects, amphibians, even fish. For a hen to produce a single egg, she must vacuum up nearly five thousand insects. Assuming about eight hours of foraging, this means one insect every 5.5 seconds! But the lucky ducks who gratify this fat glut begin their delicate, daily extrusions: one, two, three, four, five, six. Around that sixth egg, when the hen's labors are half-expended, she stops to pluck some down from her own breast. Upon that tender layer, she continues until she has a dozen, adds more billowy cushioning and begins the next months' incubation.

Then, in a fury of birth, the shellbound lives start pipping and nicking with a specialized "egg tooth" needed only for hatching. Mottled brown and butter yellow, the squirming woodies are precocial and promising, even though they are drenched in their own amnion and albumen. It's an exasperating process, one that's cheered only through the shared struggles of kin and the motherly croons. In the course of the following day, the ducklings have time for buffing and resting before the drama of fledging.

Tricia saw a fledging once, watching and waiting each morning, knowing the time would come. But she knew the wood ducks' urge to the world would arrive in one of those unplanned moments where expectation meets surprise. That year, a hen had used a nestbox visible from Tricia's bedroom window, and she'd seen the hen burst out on brief grub breaks off the nest. But on the fledging morning, Tricia could tell the hen looked out with a more acute and cautious vigil. Tricia had been rushing out the door on her way to work, but the wary mother stopped Tricia in her tracks. With suspicions allayed, the hen fluttered earthward, voicing the same *kuk-kuk-kuk* tones that had coaxed the embryos out of the eggs. And then, one by one, the ducklings clambered up the steep-walled box, hovered on the hole's brink, looked over the fifteen foot

vertical drop, and leapt. Wood ducks have been known to fall fifty feet on this first featherless flight, though anything close to their minima would heap a human in smithereens. But somehow, the ducklings didn't break; they bounced with limber-boned bodies and walked on to water. They'd be prone to predation all summer, but the most common birds to die on fledging day are the ones too weak to try.

June 20

On this day in 1858, topographer Henry Custer and his Boundary Survey crew had been led by a Nooksack guide right up from Agate Bay along the creek where we now work. He wrote how this "trail proved to be a very rough and indistinct one & tiresome to follow: its direction was almost due north through a low breack [sic] of the mountains surrounding the lake." Oh, how I wish Mr. Custer was more detailed about his indistinctions! Were there no beaverworks then to open the landscape? Were there not salmonberries abounding to salve his weariness between the mountains? His entry may have been just a day's scribbling for his survey's reconnaissance, but I trust his guide had a place for it on his seasonal rounds.

I pray for work that bridges what was difficult for Custer, and us other seekers, to see. The Nooksack people called this place home, just as the scores of other tribes had in their own watersheds up and down the Northwest Coast. This was salmon nation through and through, but its livelihood was dependent on a diverse, loved, worked-in land. Not quite agriculture and not quite wilderness, there were – and still are – practices of care for the rounds that encompass us. Almost 365 days later, our once-withered goatsbeard endures, telling us that now is always the time for re-membering how stories shape the seasons, how light changes and charges the year. I think of the Kwak'wala word, from central British Columbia, that Chief Adam Dick calls *q*$^{w'}$*aq*$^{w'}$*alaʔowk*^{w}, or "keeping it living." *q*$^{w'}$*aq*$^{w'}$*alaʔowk*^{w} is the promise of the humble, partial

harvest, of the seasons that are paths of survival. As we live from birth to birth, the seasons are ever grounding and guiding us, in all we have been, all we are, and all we can ever hope to be.

May this be a map
a time-place forever
hand made and light
drawn to show under
and story what leaves hide
what birds see
what hunters miss.
May this be a map
groundtruthed in facts
a feel guide we live by
a mazement scaled
by sunk feet. May this
be a map relieved
not all fits but one
that is accepting, thankful
that each is becoming
coordinate.


SQUALICUM MOUNTAIN
Clearcut
N
Dahlstrom Way
Hamilton's Road
Red Alder
Maple Corners
Yew
Vine Maples
Western Hemlock
60+ year old Bitter cherries
American Witch Hazel
Indian Plums
Cascara
Tractor/Amigo Pavilion
Hazelnuts
Sarvisberry
House
Garage
Grapes
Ponderosa Pine
Sword Fern
Douglas Fir
Wood Shed
Rhododendrons
Melrose
Filbert
Compost
Silphiums
Grapes
Gravenstein
Quince
Cherries
Raspberries
Aronia
Blueberry
Salal
Dam 1
Dam 2
Kneeling Angelica
Canada Mayflower
Paper Birches
GB Heron
SWAMP
Skunk Cabbage
Cottonwoods
Solomon's Seal
Carol's Clearing
Bigleaf Maples
Lodge
Thimbleberry
Sitka Spruce
Salmonberry
Strawberries
Jensen Road
Agate Bay Lane
110 Year old Douglas Fir
1946 Pontiac
Baneberry
Foamflower
Wild Ginger
Red osiers
Hawthorn
Lodge
Western White Pines
Eastern White Oaks
Oak
Barn
Chinese Witch Hazel
Tompkins King
UPPER POND
Western Red Cedar Hemlocks
Wapato
Buckbean, Water Parsley
Mink
Highbush Cranberry
Gary Oak
Goldenrods
Oregon Grape
Salal
MIDDLE POND
THE PRAIRIE
Asters
Silphiums
Willows
Deer Fern
Field Mint
Camas
AGATE CREEK
Main Dam

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